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10/624,532

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Woo-Young Jang

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LEE & MORSE, P.C.

1101 WILSON BOULEVARD

SUITE 2000

ARLINGTON, VA 22209

EXAMINER

APANIUS, MICHAEL

ART UNIT

PAPER NUMBER

3736

DATE MAILED: 05/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|------------------------------------|--|
| Office Action Summary | Application No. 10/624,532 | Applicant(s) JANG ET AL. | |
| | Examiner Michael Apanius | Art Unit 3736 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17, 19, 24, 28-45, 50, 51 and 53-67 is/are pending in the application.
- 4a) Of the above claim(s) 2, 7, 9, 11, 16, 28-45, 50, 51 and 61-67 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3-6, 8, 10, 12-15, 17, 19, 24 and 53-60 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 March 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date: _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in response to the amendment filed 3/2/2006. The Examiner acknowledges the amendments to claims 8, 19, 24 and 53; the amendments to the specification; four replacement drawing sheets; and one new drawing sheet. The Examiner notes that claim 29 should additionally be labeled as --Original--. Currently, claims 1-17, 19, 24, 28-45, 50, 51 and 53-67 are pending and claims 2, 7, 9, 11, 16, 28-45, 50, 51 and 61-67 remain withdrawn from consideration.

Priority

2. Acknowledgement is made of Applicant's claim for foreign priority and receipt of a certified copy of the 2002-43926 Korean application.

Drawings

3. The replacement drawings sheet and new drawing sheet are accepted.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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5. Claims 1, 15, 53 and 54 are rejected under 35 U.S.C. 102(b) as being anticipated by Fletcher et al. (US Patent No. 3,957,037).

6. Regarding claim 1, Fletcher discloses an impedance measurement system for measuring skin impedance in a small skin region, comprising an electrode unit having current supply electrodes (the two outside electrodes of figure 1) and measurement electrodes (the two inside electrodes of figure 1), and a current source (12). Note that the current source may be constructed from a "constant current generator" (column 3, lines 51-53) that is capable of supplying a constant alternating current.

7. Regarding claim 15, the system has electrode distance adjusters (figure 2) for adjusting the distance between the electrodes.

8. Regarding claim 53, the measurement electrodes are disposed between the current supply electrodes (see arrangement in figure 1).

9. Regarding claim 54, the current supply electrodes comprise two electrodes opposite one another.

10. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Libke et al. (US Patent No. 4,895,163).

11. Libke discloses an impedance measurement system for measuring skin impedance in a small skin region, comprising an electrode unit having current supply electrodes (12 and 16) and measurement electrodes (10 and 14), and a current source. Note that Libke states that the current source maintains a test signal and that the current source remains constant (column 6, lines 12-26). Therefore, the current source

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is at least capable of maintaining a constant alternating current through the current supply electrodes.

12. Claims 1 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Gallup et al. (US Patent No. 5,372,141).

13. Regarding claim 1, Gallup discloses an impedance measurement system for measuring skin impedance in a small skin region, comprising an electrode unit (column 4, lines 7-22) having current supply electrodes and measurement electrodes, and a current source (44). Note that the current source is a source of substantially constant peak-to-peak alternating current (column 1, lines 50-51) capable of supplying a constant alternating current.

14. Regarding claim 24, the system has an image display unit including a data analyzer (34), a signal conversion unit (62), an operation controller (14), and a display unit (12 and 36).

15. Claims 1 and 60 are rejected under 35 U.S.C. 102(b) as being anticipated by Skladnev et al. (WO 00/19894).

16. Regarding claim 1, Skaldnev et al. discloses an impedance measurement system for measuring skin impedance in a small skin region, comprising an electrode unit (figure 4) having current supply electrodes (15) and measurement electrodes (13), and a current source (127 in figure 5). Note that the current course is a voltage controlled

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current generator (page 15, lines 1-4) and therefore is capable of supplying a constant alternating current when the controlling voltage remains constant.

17. Regarding claim 60, the system includes a signal processing unit (figure 5), which is connected to the electrodes, receives response signals, generates a potential difference signal, removes noise, and amplifies (page 14, line 13 - page 15, line 24).

Claim Rejections - 35 USC § 103

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

19. Claims 1, 4, 6, 8, 10 and 53-59 rejected under 35 U.S.C. 103(a) as being unpatentable over Hirschman (US 6,408,204).

20. Regarding claim 1, Hirschman discloses an impedance measurement system for measuring skin impedance in a small skin region, comprising an electrode unit (figure 4) having current supply electrodes (52a and 52d) and measurement electrodes (54b and 54c), and a current source (column 6, lines 60-61).

21. Regarding claims 53-59, Hirschman discloses that opposing first and second measurement electrodes are located between opposing first and second current supply electrodes. Hirschman further discloses that the electrodes can have the same complimentary open two-dimensional shape (column 8, lines 34-37).

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22. Regarding claims 4, 6, 8 and 10, the measurement electrodes are disposed perpendicular to the current supply electrodes.

23. Hirschman appears to be silent concerning whether or not the current source is capable of supplying a constant current to the current supply electrodes. However, Hirschman discloses that in conventional impedance plethysmography a constant current source (15) of RF energy is used (column 5, lines 57-60).

24. Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to have used a constant current source of RF current in the system of Hirschman because constant current sources are well-known and routinely applied within the art.

25. Claims 3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirschman (US Patent No. 6,408,204) as applied to claims 1, 4, 6, 8, 10 and 53-59 above, and further in view of Hagen et al. (US Patent No. 5,114,424).

26. Hirschman meets the limitations of claims 1, 4, 6, 8, 10, 53-56 and 59 as stated above.

27. Regarding claims 3 and 5, although Hirschman discloses that the electrodes can have any suitable configuration (column 8, lines 34-37), he does not expressly disclose an angular shape.

28. Hagen teaches alternative angular open two-dimensional electrodes which face one another (14 and 15 in figure 3) that can be used in impedance measurements (column 4, lines 42-43).

29. Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to have used the angular electrode shape taught by Hagen as an alternative electrode shape in the system of Hirschman.

30. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Libke et al. (US Patent No. 4,895,163) in view of Dufresne et al. (US Patent No. 4,917,093).

31. Libke further discloses that the current source has an input unit (figure 5), an external power supply (9V battery in figure 5), a current converter (in figure 3), and an output unit (left side of figure 4).

32. Libke does not expressly disclose a current intensity controller.

33. Dufresne teaches a current intensity controller that uses a variable resistor (column 7, lines 40-43, 132 in figure 4) for the purpose of improving battery life (column 2, lines 29-32).

34. Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to have used a current intensity controller as taught by Dufresne et al. in the system of Libke et al. in order to improve battery life.

35. Claims 1, 19 and 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mee et al. (US Patent No. 4,578,635) in view of Skladnev et al. (WO 00/19894).

36. Mee et al. discloses an impedance measurement system having measurement electrodes (2), and a signal processing unit (column 7, line 47 - column 8, line 60)

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comprising a buffer (A1 in figure 2), a potential difference measurer (1), a combined offset voltage controller and amplifier (A2), and a phase inverter amplifier (A3).

37. Mee et al. does not expressly disclose current supply electrodes, a current source, or a filter.

38. Skaldnev et al. teaches current supply electrodes (13 in figure 4) connected to a current source (127 in figure 5) capable of supplying a constant alternating current and a signal processing unit which includes a filter (137) for the purpose of allowing multiple measurements which complement each other to improve accuracy of tissue type recognition (page 4, lines 9-12).

39. Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to have used current supply electrodes, a current source and a filter as taught by Skladnev et al. in the system of Mee et al. in order to accurately recognize tissue types.

40. Claims 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fletcher et al. (US Patent No. 3,957,037) in view of Hofmann (US 5,810,762).

41. Fletcher discloses electrode distance adjusters but does not expressly disclose an adjuster having the structure set forth in claims 12-14. Note that the electrode distance adjusters of Fletcher are capable of being separated from each other by a predetermined distance and in a perpendicular arrangement when appropriately positioned on various limbs of a patient. Furthermore, note that it would have been obvious to one having ordinary skill in the art at the time of invention to have altered the

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connection of the electrodes to the electronics such that one adjuster comprises both measurements electrodes and the other adjuster comprises both current supply electrodes in order to suit a particular testing paradigm.

42. Hofmann teaches an electrode distance adjuster (figure 9) including a stationary screw line (140), a rotary screw (150), and fixing studs (152 and 154).

43. It would have been obvious to one having ordinary skill in the art at the time of invention to have used the electrode distance adjuster taught by Hofmann in the system of Fletcher because the adjusters are art-recognized alternatives that perform the same function of adjusting the distance between electrodes and because it is routine in the art to substitute equivalent parts.

Response to Arguments

44. Applicant's arguments filed 3/2/2006 have been fully considered but they are not persuasive. Applicant argues that the Hirschman, Skladnev, Fletcher, Gallup and Libke references disclose current sources for supplying alternating current to the current supply electrodes, as opposed to the "constant current" recited in claim 1. However, the Examiner respectfully submits that the fact that a current is an alternating current does not preclude the current from also being considered constant. Some of the applied references, as noted above, use the word "constant" in regards to an alternating current. This clearly shows that an alternating current can be a "constant current" as termed within the art. For example, a constant alternating current can be considered constant in the sense that constant current parameters (amplitude, frequency) are applied for a

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period of time. Alternatively, a constant current may be constant in the sense that the current remains constant regardless of the load that is placed across the current source. Therefore, as noted above in the rejections, the Hirschman, Skladnev, Fletcher, Gallup, and Libke references disclose either a constant alternating current or a constant current source that is capable of supplying a constant alternating current to the current supply electrodes.

45. Note that the rejection of claims 1, 4, 6, 8, 10 and 53-59 under 35 U.S.C. § 102(b) as being anticipated by Hirschman in the Office Action of 11/2/2005 is withdrawn because the reference appears to be silent regarding whether or not the current source of the applied embodiment is capable of supplying a constant alternating current to the current supply electrodes. The rejection was not withdrawn because Hirschman discloses the use of alternating current. A new rejection under 35 U.S.C. § 103 is presented because Hirschman teaches that a constant current source of RF energy is conventionally used in impedance plethysmography.

Conclusion

46. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Apanius whose telephone number is (571) 272-5537. The examiner can normally be reached on Mon-Fri 8:30am-5pm.


47. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Max Hindenburg can be reached on (571) 272-4726. The fax phone

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number for the organization where this application or proceeding is assigned is 571-273-8300.

48. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MA


MAX F. HINDENBURG
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700